CSC104 Assignment #2

Total: 100 marks   Due: November, 9th 2011

Percentage of Course: 15%

Q1. (10 marks) Writing a Specification.   You will write a specification for the splice simpler. You should list all requirements that were listed, any inputs the function takes, what it returns, any outputs it makes (audio,video,picture, etc.) and whether or not it makes permanent changes to inputs. You will start from the file **spliceSimpler.py** located on the course website, and make your edits in JES.

Q2. (40 marks) Write a program which takes two pictures as inputs and creates a new picture which interleaves* them. For each dimension you should use the dimension of the smaller of the two pixels. Your inner loop should be on the length of the picture and your outer loop on the width (This will ensure if the dimension is not a multiple of 20 you count in the same order). I recommend a separate counting variable to determine when to change pictures. You should also use a variable that tells you which picture you are taking pixels from. You will use the file **twoPictures.py** on the course website.

> **2.a) (10 marks)** Write a specification of this function.

> **2.b) (5 marks)** Correct inputs and creation of picture

> **2.c) (10 marks)** Correct use of conditionals and counters to determine the variables.**

> **2.d) (10 marks)** Correct setup of loops, access of input pictures and changing of output picture.**

> **2.e) (5 marks)** Correct Return and unintended outputs.

* In this question, I want you to interleave two pictures by taking 10 pixels from the first picture; then 10 pixels from the second picture; the next 10 pixels from the first picture and so on until all the pixels have been used.

** You may want to work on parts of this question simultaneously or out of order based on whatever approach you find more comfortable to writing this function.

Q3 (50 marks): Write a function which takes in two sounds and builds a sound consisting of: the first half of the shorter sound; then, the second half of the shorter sound added to a segment of the same length at the beginning of the longer sound; and finally the remainder of the longer sound in reverse order. For this function you will work from the file **twoSounds.py**

> **Q3.a) (10 marks)** Write a specification covering: inputs, output(s), return values and a brief description of the function.

> **Q.3b) (10 marks)** Determine which sound is longer, use sound1 as the longer sound in case of a tie, and set any variables you use to aid you in doing this.

> **Q.3c) (10 marks)** Setup the sound you wish to build (with correct size) and copy the first half of the shorter sound into it.

> **Q.3d) (10 marks)** Create the copied portion consisting of the added values. You may assume that each sound has a largest maximum value of 16,000 and a largest minimum value of -16,000. You should include these assumptions in your specification.

> **Q.3e) (10 marks)** Reverse the second sound (you may wish to use a helper function to do this), and add the reversed sound to the appropriate location in your sound (you many wish to use a helper function to do this as well). Return your final sound.